

California State Water Project Watershed Sanitary Survey 2006-2010

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Presentation Outline

■ Approach

- Executive Summary
- I. Introduction
- 2. System Environment
- 3. Water Quality
- 4. Key Water Quality Vulnerabilities of the Delta and SWP
- 5. Findings and Recommendations

■ Report Review and Schedule

■ Action Plan



Chapter 2. System Environment

Draft Submitted and Comments Received

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Drinking Water Regulations		✓	
Source Water Protection Regulations		✓	
Biological Opinions	✓		
Policy Setting	✓		

Chapter 3. Water Quality in the Watersheds and the SWP – Draft Submitted Jul 15

- Watershed and Water Supply
- Water Quality
 - Organic Carbon
 - Salinity
 - Bromide
 - Turbidity
 - Nutrients
 - Algal Blooms and T&O
 - Trace Elements and Pesticides
 - Pathogens and Indicator Organisms
 - Constituents of Emerging Concern

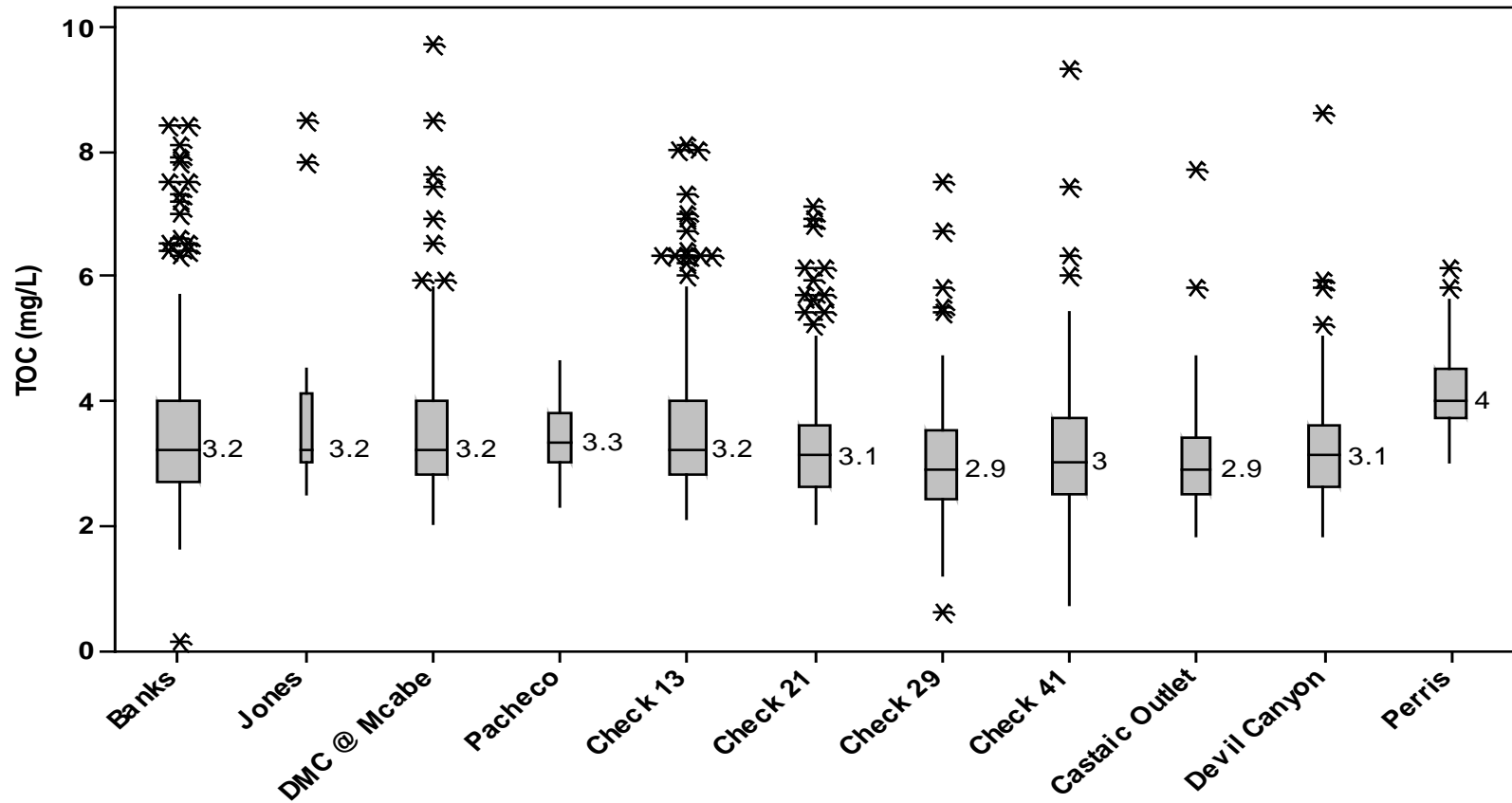


Water Quality Analyses

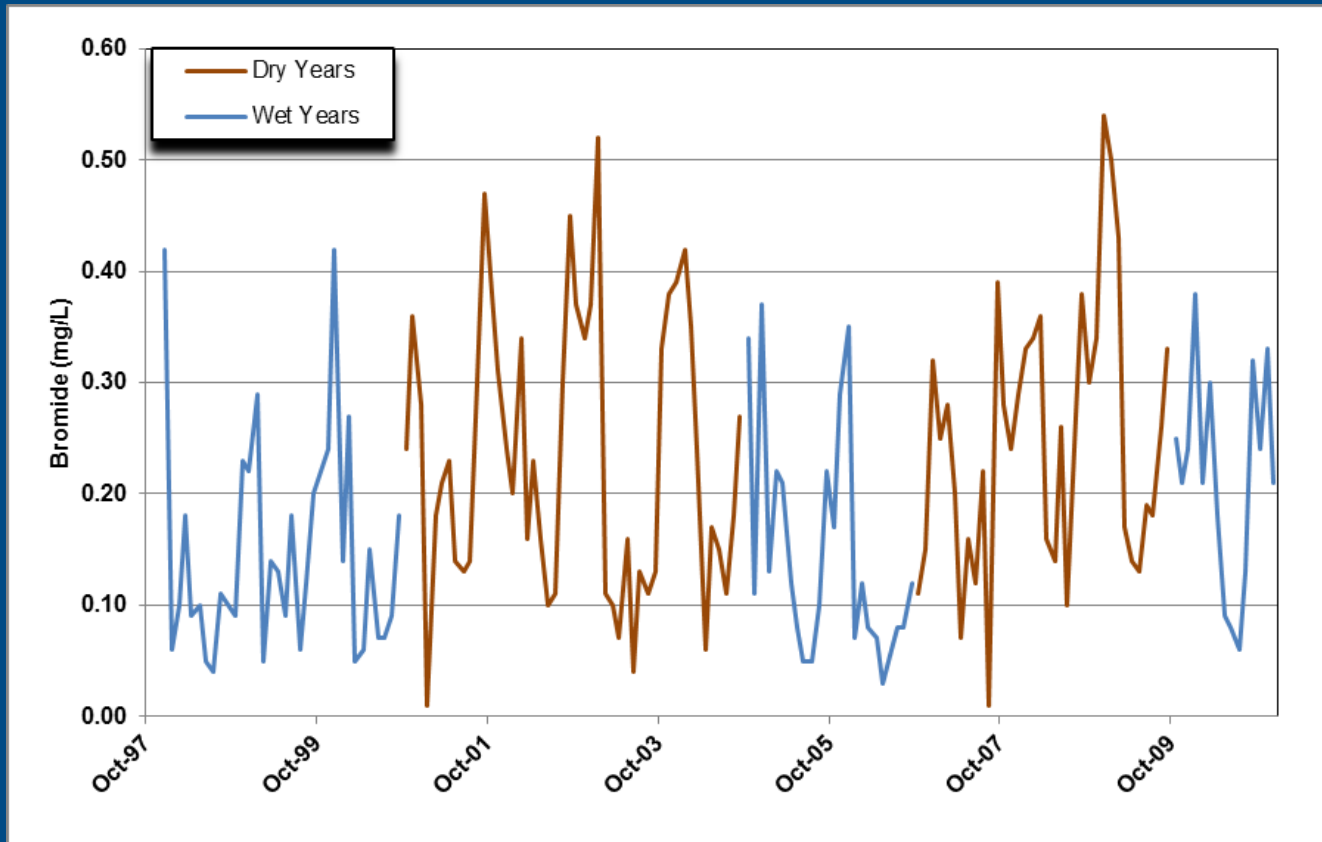
- **Multiple locations**
 - Trends from upstream, through Delta, along aqueduct, in reservoirs
- **Each Location**
 - Auto-sampler/grab sample comparisons
 - Long-term trends
 - Seasonal trends
 - Water year type trends



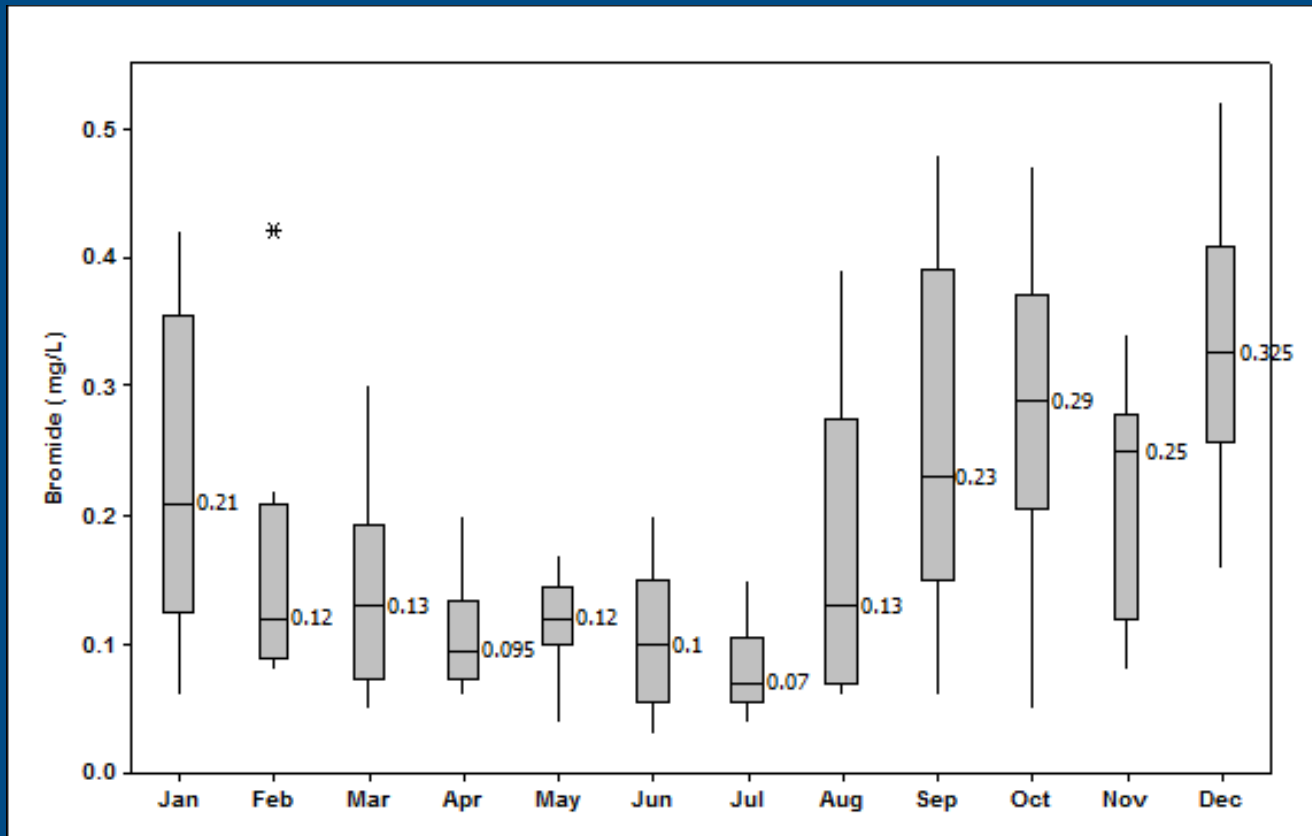
Spatial Trends – TOC in SWP



Dry Year/Wet Year Comparison



Seasonal Variability



Chapter 4. Key Water Quality Vulnerabilities of the Delta and SWP

Due Sep 16

- Key Delta Contaminant Sources and Vulnerabilities
- Key SWP Contaminant Sources and Vulnerabilities
- Key SWP Facility Operations Vulnerabilities



Key Delta Contaminant Sources and Vulnerabilities

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Wastewater Treatment Plants		✓	
Urban Runoff		✓	
Carbon Sequestration	✓		
Farmland to Habitat Islands	✓		
Delta Rice		✓	
Delta Recreation		✓	



Key SWP Contaminant Sources and Vulnerabilities

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
North Bay Aqueduct		✓	
South Bay Aqueduct		✓	
Clifton Court Forebay			✓
San Luis Reservoir	Cattle grazing	Low Point	
Coastal Branch		✓	



Key SWP Contaminant Sources and Vulnerabilities

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Non-Project Inflows	✓		
Intertie Project	✓		
Subsidence Along Aqueduct	✓		



Key SWP Contaminant Sources and Vulnerabilities

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Pyramid Lake			✓
Castaic Lake		✓	
Silverwood Lake			✓
Hesperia Drainage		✓	
Lake Perris		✓	



Key SWP Facility Operations Vulnerabilities

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Impacts of Operational Changes and Drought on Water Quality	✓		

Chapter 5. Findings and Recommendations

Due Oct 28

- Progress on 2006 Action Items
- Summary and Recommendations for 2011 Action Items

Report Review and Schedule

- Draft Report – Dec 30, 2011
- Revised Draft Report – Mar 16, 2012
- Draft Final Report – Apr 27, 2012
- Final Report Submitted to CDPH – Jun 29, 2012

Action Plan

- Draft Actions – Dec 30, 2011
- Meetings in No. and So. Cal – May 2012
- Draft Action Plan – Jun 15, 2012
- Final Action Plan – Aug 31, 2012

Questions And Comments

Wastewater Treatment Plants

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Wastewater Treatment Plants		✓	

- Update information in 2006 Update
 - Population projections
 - Treatment processes, flows, effluent quality
- Wastewater loads from WARMF
- NDMA and pathogen studies
- Wastewater spills
- Staffing
 - Bonny Starr – 40 hours
 - Elaine Archibald – 4 hours
- Budget - \$5,780

Urban Runoff

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Urban Runoff		✓	

- **Update information in 2006 Update**
 - Review MS4 permits and Annual Reports for Sacramento, Stockton, eastern Contra Costa County
- **Urban runoff loads from WARMF**
- **Steelhead Creek and Lathrop Studies**
- **Staffing**
 - Bonny Starr – 32 hours
 - Elaine Archibald – 4 hours
- **Budget - \$4,740**

Carbon Sequestration

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Carbon Sequestration	✓		

- Review four key projects to identify current scope and status of programs, potential future programs, and identify available source water quality data
 - USGS subsidence research on Twitchell Island
 - Mayberry Farms – Farm scale tule project
 - Farm scale rice pilot project
 - Carbon sequestration and wetland farming demonstration project
- Staffing
 - Bonny Starr – 24 hours
 - Elaine Archibald – 2 hours
- Budget - \$3,410

Conversion of Farmland to Habitat Islands

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Conversion of Farmland	✓		

- Review literature such as:
 - BDCP conservation measures
 - 2009 Evaluation of draft BDCP conservation measures by multiple teams of experts - Evaluated scientific efficacy of proposed restoration actions and analyzed both positive and negative outcomes
- Discuss water quality implications & recommend actions
- Staffing
 - Leslie Palencia – 32 hours
 - Elaine Archibald – 4 hours
- Budget - \$4,740

Delta Rice

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Delta Rice		✓	

- Update information from 2006 Update
- New information
 - Impacts of rice farming on carbon sequestration, mercury methylation, and subsidence mitigation
- Staffing
 - Elaine Archibald – 12 hours
 - Leslie Palencia – 2 hours
- Budget - \$2,000

Recreational Usage of the Delta

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Recreation		✓	

- Update information in 2006 Update
 - Boater education
 - Marina operations
 - Abandoned vessels
- New information
 - Great California Delta Trail
- Staffing
 - Bonny Starr – 32 hours
 - Elaine Archibald – 4 hours
- Budget - \$4,740

North Bay Aqueduct

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
North Bay Aqueduct		✓	

- **Update information on 2006 Update issues**
 - Barker Slough Watershed Management Program
 - Water exchanges
 - Alternative Intake Project
- **New information**
 - Hydrodynamic modeling
 - Algal bloom and T&O episode in Feb 2009
 - Cache Slough habitat restoration
- **Staffing**
 - Elaine Archibald – 32 hours
 - Leslie Palencia – 2 hours
- **Budget - \$4,900**

South Bay Aqueduct

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
South Bay Aqueduct		✓	

- **Update information from 2006 Update**
 - SBA Improvement and Enlargement Program
 - Watershed Protection Program Plan
 - Cattle grazing in the Bethany watershed
 - Proposed trail along SBA
- **Staffing**
 - Elaine Archibald – 32 hours
 - Leslie Palencia – 2 hours
- **Budget - \$4,900**

Clifton Court Forebay

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Clifton Court Forebay			✓

- **Review Actions from 2006 Update**
 - Decision to not dredge the forebay
 - Actions on real-time monitoring
- **Staffing**
 - Elaine Archibald – 8 hours
 - Leslie Palencia – 1 hour
- **Budget - \$1,290**

San Luis Reservoir

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
San Luis Reservoir	Cattle grazing	Low Point	

- Update information from 2006 Update
 - San Luis Low Point Project
 - Cattle Grazing
- Staffing
 - Elaine Archibald – 22 hours
 - Leslie Palencia – 2 hours
- Budget - \$3,450

Coastal Branch

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Coastal Branch		✓	

- **Update 2006 section to reflect changes**
 - Update on taste and odor problems from 2006-2010
 - Resolution of sediment accumulation in storage tanks and forebays
- **New information**
 - Evaluation of SolarBee effectiveness
 - New maintenance measures implemented by CCWA and DWR
- **Staffing**
 - Leslie Palencia – 22 hours
 - Elaine Archibald – 4 hours
- **Budget - \$3,440**

Non-Project Inflows

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Non-Project Inflows	✓		

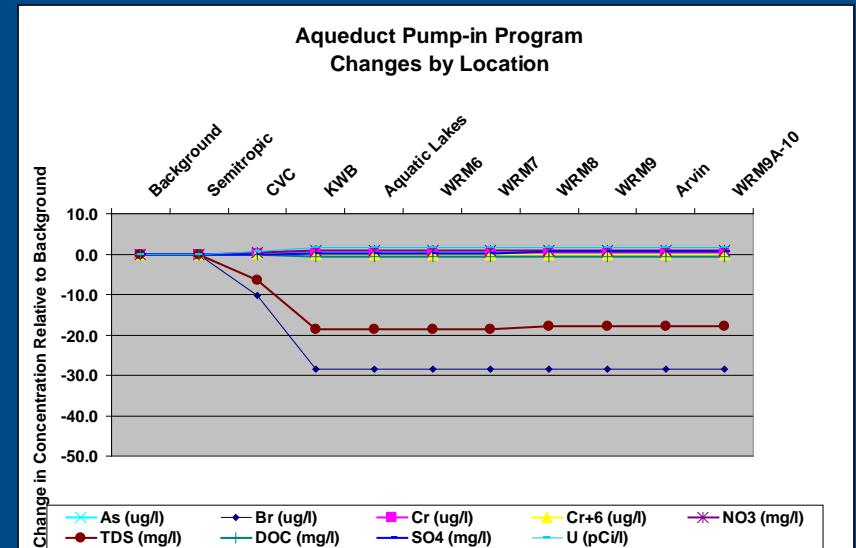
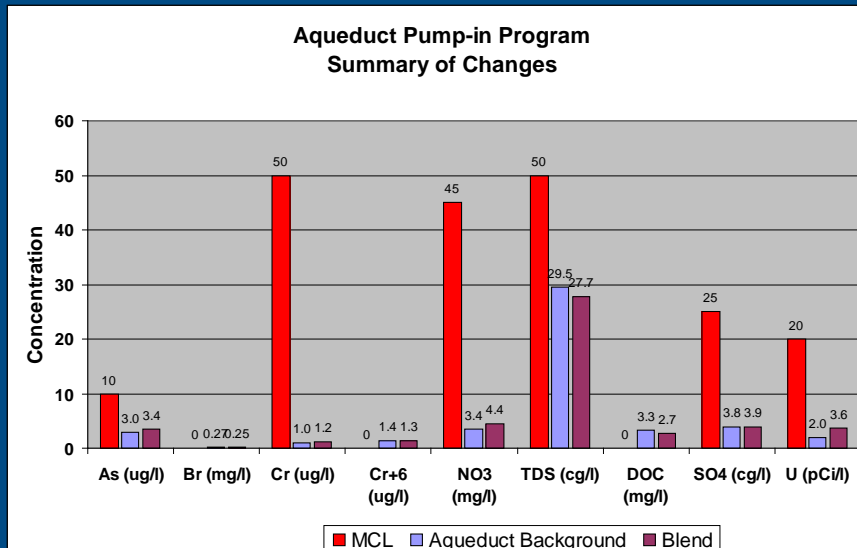
- Describe DWR policy for acceptance of pump-in water
 - Water quality criteria dictate that pump-in entity must demonstrate water is consistent and acceptable prior to pumping into SWP
- Describe use of management tools – Aqueduct Blending Model, any others?
- Any significant changes to pump-in program since 2006
- Comparison of Aqueduct Water Quality upstream of pump-ins to downstream of pump-ins
 - Key upstream locations (check 21 and check 23)
 - Key downstream locations (checks 39 and check 41)
 - Arsenic, nitrate, sulfate, TDS, TOC, bromide

Non-Project Inflows

- Compare results from Aqueduct Blending Model results to Actual WQ Data Collected by DWR and MCLs
 - Assume that KCWA will allow modeling of other scenarios
 - Model results will cover a longer time period, every year, sum of 5 years
- Obtain individual well data, or multiple well data and compare to MCLs
- Staffing
 - Leslie Palencia – 120 hours
 - Elaine Archibald – 16 hours
- Budget - \$17,920

Non-Project Inflows

Possible Graphical Plots to be Completed over Entire Study Period



Water Transfers

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Water Transfers	✓		

- Describe water transfer program – monitoring and management
- Provide background and information on sources, Contractors and sellers who have participated
- Provide information on water transfer volume, location and discuss whether or not each transfer is likely to impact water quality
- Need to discuss Contractor concerns with water quality at Dec meeting
- Staffing
 - Leslie Palencia – 32 hours
 - Elaine Archibald – 4 hours
- Budget - \$4,740

Subsidence Along Aqueduct

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Subsidence Along Aqueduct	✓		

- Primary Information source will be on-going USGS study which began in Sept. 2009
- Preliminary results on location, extent and magnitude of subsidence along Aqueduct
- Discuss USGS method for tracking subsidence
- If possible, recommendations for how to manage and minimize subsidence
- Relevance of USGS San Joaquin Valley Subsidence Study
- Staffing
 - Leslie Palencia – 32 hours
 - Elaine Archibald – 4 hours
- Budget - \$4,740

Wastewater and Chemical Spills

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Spills		✓	

■ Wastewater Spills

- Major spills in the Delta covered in Section V – Delta Contaminant Sources and Vulnerabilities and in Silverwood Lake section

■ Chemical Spills

- No known spills
- Will provide update of Pyramid oil spill
- Will not search through OES database

Pyramid Lake

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Pyramid Lake			✓

- Review Action Items from 2006 report
- No new hazardous materials spills from 2006-2010
- Staffing
 - Leslie Palencia – 8 hours
 - Elaine Archibald – 1 hour
- Budget - \$1,185

Castaic Lake

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Castaic Lake		✓	

- **Update 2006 section to reflect changes**
 - Update on 2007 MWDSC molecular fingerprinting study
 - Update action items
- **New information**
 - Discuss best management practices taken by MWDSC to address gull roosting
 - Current (2006-2010) *E. coli* levels at Castaic Lake of concern?
 - Determine if any fires in Castaic watershed and impact to MWDSC Jensen filtration plant, if any
- **Staffing**
 - Leslie Palencia – 24 hours
 - Elaine Archibald – 2 hours
- **Budget - \$3,410**

Silverwood Lake

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Silverwood Lake			✓

- Review Action Items from 2006 report
- No new sewage spills, fires in watershed from 2006-2010
- Staffing
 - Leslie Palencia – 6 hours
 - Elaine Archibald – 1 hour
- Budget - \$925

Hesperia Master Drainage Plan

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Hesperia Drainage		✓	

- **Update 2006 section to reflect changes**
 - Update action items
- **New information**
 - Current status of project, any changes to MDP
 - Verify if urban runoff continues to drain to SWP
 - Outcome of recent meetings between City of Hesperia, SWP Contractors and DWR Staffing
- **Staffing**
 - Leslie Palencia – 10 hours
 - Elaine Archibald – 2 hours
- **Budget - \$1,590**

Lake Perris

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Lake Perris		✓	

- **Update 2006 section to reflect changes**
 - Update action items for recreation, anoxic hypolimnion, seismic hazard
- **New information**
 - Alternatives to Perris Dam remediation
 - General changes in source water quality due to lower lake level
- **Staffing**
 - Leslie Palencia – 20 hours
 - Elaine Archibald – 4 hours
- **Budget - \$3,180**

Impacts of Operational Changes and Drought on Water Quality

- Review water quality data
- Review available modeling studies
 - Volumetric, DOC, EC fingerprints
 - Modeling studies on biological opinions (?) and 2-Gates Project
- Evaluate impacts on water quality
- Staffing
 - Elaine Archibald – 80 hours
 - Leslie Palencia – 8 hours
- Budget - \$12,640

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Impacts on Water Quality	✓		

Security and Emergency Response

Topic	Level of Effort		
	New Evaluation	Update	Review Actions
Security and Emergency Response			✓

- Deleted major effort from scope of work
- Acknowledge transmittal of information to CDPH
- DWR has prepared internal report evaluating water quality response during emergencies
- Staffing – no hours allocated
- Budget - \$0

Report Preparation

	Elaine Archibald	Leslie Palencia	Bonny Starr
Sections	32		
Draft Report	40	20	16
Revised Draft	24	8	8
Draft Final	24	8	8
Final Report	24	8	8
Action Plan	40	16	4

- Budget - \$40,200

Meetings and Project Management

- Monthly MWQI TAC Calls (15)
- Sanitary Survey Subcommittee Meetings (5)
- MWQI TAC Meeting (1)
- Project Management
- Staffing
 - Elaine Archibald – 97 hours
 - Leslie Palencia – 57 hours
 - Bonny Starr – 43 hours
- Budget - \$27,065

Schedule

- See Handout